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East Texas: A Timbered Empire

By Edwin J. Foscue

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Figure 1. The East Texas Timbered Empire. Scene along U. S. Highway 69 between Zavalla and Woodville at the Neches River crossing. (Courtesy Texas Highway Department.)
East Texas: A Timbered Empire

By Edwin J. Fosgue*

The forest-covered portion of East Texas, with an area of approximately 28,000 square miles, is larger than Vermont, New Hampshire, and Massachusetts combined (Fig. 1). The timbered region, which represents about one-eighth of the total area of the state, has contributed so much to the history and economic development of Texas that it deserves to be better known.

East Texas has a regional unity, but its boundaries are poorly defined (Fig. 2). From the early Spanish period to the later Anglo-Saxon pioneer period, it has coincided roughly with the piney woods and adjacent parts of the oak-hickory belt (Fig. 3). The maps in Fig. 4 give the western and southern boundaries as delineated for various purposes. For this study, the western and southern boundaries are made to follow county lines, so that county statistics can be utilized; these lines do not, of course, coincide exactly with edges of the forested region. The counties included are:

- Anderson
- Gregg
- Marion
- Red River
- Titus
- Angelina
- Hardin
- Montgomery
- Rusk
- Trinity
- Bowie
- Harrison
- Morris
- Sabine
- Tyler
- Camp
- Henderson
- Nacogdoches
- San Augustine
- Upshur
- Cass
- Houston
- Newton
- San Jacinto
- Van Zandt
- Cherokee
- Jasper
- Panola
- Shelby
- Walker
- Franklin
- Liberty
- Polk
- Smith
- Wood

Reference to the identification map (Fig. 5) will enable the reader to avoid confusion over city and county names in East Texas. In several cases a city is located in a county of a different name, while the county having that name has a major city with another name. Henderson, Houston, Rusk, and Tyler are names of counties and also

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Figure 2. Area included in the East Texas region. Cities bordering East Texas are designated by initials: (D) Dallas, (FW) Fort Worth, (W) Waco, (A) Austin, (SA) San Antonio, (H) Houston, (G) Galveston, (B) Beaumont, (PA) Port Arthur, and (O) Orange.

of cities. But Henderson, the city, is the county seat of Rusk County, while Henderson County has Athens as its county seat; Houston, the city, lying outside the region, is the county seat of Harris County, but Houston County has Crockett as its county seat; Rusk, the city, is in Cherokee County but, as we have seen, Rusk County has Henderson as its county seat; and Tyler, the city, is the county seat of Smith County, while Tyler County has Woodville as its county seat.

Although it is impossible to draw any definite economic boundary between East Texas and the highly industrialized Gulf Coastal region to the south (Foscue 1950, pp. 1-18; 1957, pp. 1-14), or the mechanized agricultural and industrial prairie region to the west, the boundary lines used in this study exclude the larger industrial centers of Dallas, Fort
Figure 3. The major types of forests in the East Texas region (after map by the Texas Forest Service).

Worth, Waco, Austin, San Antonio, Houston, Galveston, Beaumont, Port Arthur, and Orange (Fig. 2). The largest urban centers in East Texas are Texarkana, Marshall, Longview, and Tyler. While these cities are growing rapidly, none has yet reached the 100,000 class.
East Texas is moving rapidly from an agricultural economy into an industrial economy, but the transition is not yet complete.

**THE PHYSICAL SETTING**

_Terrain._ East Texas lies within the western section of the Gulf Coastal Plain Province as described by Fenneman (Fenneman 1938, pp. 100-120). The terrain consists of a rolling plain sloping gently southeastward to the Gulf of Mexico, with several inward-facing cuestas breaking it into belts of progressively younger bedrock. Starting with the southeastern edge of the Black Prairie, these cuestas are the Nacogdoches Escarpment, the Kisatchie Escarpment, and the Hockley Scarp (Fig. 4-A). South of the latter cuesta is a relatively flat piney belt that merges with the Coastal Prairie some fifty miles back from the coast. While none of these cuestas has bold relief, the hilly northwest-facing slopes of each produce the maximum relief of the region. This is particularly true along the inner margin of the Nacogdoches Escarpment, in the belt known as the Redlands, where the local relief measures as much as 300 feet. Some of the hills have even been called "mountains," and have given their names to settlements—e.g., Mount Selman, Mount Enterprise. The major streams of the region, the Trinity, Neches, Angelina, and Sabine, flow in a south-easterly direction and cut across the cuestas. Their flood plains are characteristically broad and swampy. Elevations range from a few feet above sea level at the southern edge of the forest belt to nearly 700 feet above sea level at Mount Selman.

_Climate._ East Texas has a mesothermal climate, classified as a Cf type (Russell 1945, pp. 37-52). The average annual rainfall varies from 35 inches along the western border (Fig. 4-B) to more than 55 inches in the southeastern part, which is adequate to support forest growth. In some years the total rainfall exceeds the annual average—in 1956 it was more than double. Hurricanes pass through the region at infrequent intervals, bringing excessive precipitation. Every East Texas weather station has experienced a maximum 24-hour rainfall of over 10 inches (Visher 1941, pp. 644-52). These heavy rains not only cause destructive gullying in the uplands but also produce heavy flooding in bottoms along the major streams.

Though all parts of the region are subject to short periods of freezing temperature, only the northern margin along the Texas-Oklahoma border can be classified as having cold winters (CDf
climate). The hot and humid summers are well suited to the growth of cotton and corn, while the winters are mild enough for crops with a long growing season. The average length of growing season increases from less than 240 days in the north to more than 280 in the south (Fig. 4-C). Warm temperatures, high humidity, and abundant rainfall are ideal for the growth of trees.
Natural Vegetation. The East Texas region was originally covered by a dense forest consisting largely of evergreen conifers interspersed liberally with hardwoods, particularly in the river bottoms. The pine forests were composed of longleaf (*Pinus palustris*) and slash pine (*Pinus caribaea*) in the southern part of the region and loblolly (*Pinus taeda*) and shortleaf (*Pinus echinata*) in the northern part (Fig. 3). These dense stands of pine presented a challenge to the early explorers and settlers. Although pines occupied some of the low-lying plains of the coastal region, they were usually the vegetation of the hilly interfluves. In the better-drained interfluvial areas red oak (*Quercus borealis*), white oak (*Quercus alba*), sweetgum (*Liquidambar styraciflua*), yellow poplar (*Liriodendron tulipifera*), and hickory (*Carya*) are prominent members of the plant association and are dominant in certain localities. In the swampy bottom lands are dense stands of blackgum (*Nyssa sylvatica*), water tupelo (*Nyssa umfiora*), red maple (*Acer rubrum*), cottonwood (*Populus*), sycamore (*Platanus occidentalis*), cypress (*Taxodium*), and a variety of other trees, shrubs, and vines (Josephson and Hair 1956, pp. 149-52). Native grass lands are uncommon, except along the borders of the Black Prairie and the Coastal Prairie.

To the land-hungry agricultural pioneers from the humid east, the dense forest was an economic enemy; hence they methodically cut and burned trees to clear land for crops. Some forested land was suited to crops, particularly the fertile alluvium of the bottom lands, but most of it should have been left in timber. Years later, logging and lumbering companies cut much of the timber (chiefly pine) and left large cut-over and burned-over areas. For years following the peak of the sawmill industry in the early 1900's, the forest remained practically abandoned. In recent years reforestation and tree farming have developed on this cut-over and burned-over land. Today more than 93 per cent of this region is privately owned (*Texas Forest News* 1956, p. 1).

Soils. The soils of the East Texas region consist chiefly of sands and fine sandy loams with their surface horizons usually light red or yellow. The subsoils, which are largely of clay or sandy clay, differ greatly in color and structure. These soils reflect in their characteristics the influence of the humid subtropical climate and the vegetal cover of pine. Because of heavy rainfall leaching has been severe and in places gully forming has been critical. The river bottoms contain thick
deposits of alluvium upon which true soils have not developed. Upland soils, which occupy 85 per cent of the total area, have been favored in the development of agriculture and forestry, although some of the better-drained bottom lands have produced good crops. Most soils of the region are acid. The major classes of upland soils are: (1) the Kirvin-Bowie group, (2) the Kirvin-Norfolk group, (3) the Nacogdoches-Norfolk group, (4) the Lufkin-Susquehanna group, and (5) the Segno-Caddo group. In addition to these major soils (Fig. 4-D), two alluvial types appear in the Ochlockonee-Bibb group and the Trinity-Catalpa group. (For more details see Carter 1931, pp. 32-51.)

East Texas soils are of only moderate productivity, although most of them can be improved through erosion control and fertilization. Soils of the upland differ in productiveness largely in proportion to their thickness. The Nacogdoches series of the upland soils—frequently called the Redlands—is the most productive. These soils are well suited to general farm crops, truck crops, fruits, and roses (in the Tyler district). Many upland soil areas, however, have been withdrawn from cultivation since cotton production has declined and have reverted to forest or been converted to tree farms.

**EARLY SETTLEMENT**

*Indian Occupance.* At the time of the first European exploration of the Gulf Southwest during the sixteenth century, the Indian tribes that occupied the timbered region of East Texas were among the most highly civilized of all natives living within the present confines of continental United States. These forest folk, generally known as the Caddoan Cultural Group, comprised a number of subgroups. The Caddo tribes occupied the northeastern part of the region, and the Hasinai (or Tejas) the central Redland Belt and the southern part (Fig. 6). These tribes lived in permanent villages, practiced sedentary agriculture, hunted game in the forest, and only rarely engaged in wars with other tribes. They grew such staples as corn (maize), beans, tobacco, fruits, and vegetables. While both the Caddo and Tejas tribes had developed a high Indian civilization, the Tejas were perhaps the more advanced because they lived in the more fertile Redlands. It is estimated that at the time the first Spanish missionaries arrived in this part of the country, the Tejas may have numbered between 4,000 and 5,000 people (Chambers 1941, pp. 1-15). These Indians were skilled potters, and their clay vessels varied greatly in design. Many
large open-mouthed jars were made for the storage of seeds, grain, and other foods. They also wove fine baskets and mats from cane splits, willow roots, and the inner bark of trees (Pearce 1938, pp. 1-15, esp. pp. 8-10).

When the Spaniards learned of the advanced civilization of the peaceful Caddos and Tejas they became interested in them. The church longed to convert them to Christianity through the establishment of missions. The Spanish government saw that by gaining control of these tribes, the two strongest, best organized, and most influential between the Sabine and the Río Grande, they could check the westward advance of the French from Louisiana and establish Spanish authority over the vast realm of Texas. It is logical that the Tejas Indians, through the Spaniards, gave their name to the province, the republic, and finally the state of Texas. Conditions changed little until the beginning of the Anglo-American period in the early part of the nineteenth century. Gradually, however, these Indians were displaced. By the time of the Anglo-American advance, East Texas was occupied by a number of smaller tribes of forest folk who were being pushed westward. These included the Cherokees, the Alabamas, and the Coushattas (Texas Almanac 1956-1957, pp. 46-56).

Spanish Colonial Period — The Missions. Although the Gulf Coast of Texas had been explored by Cabeza de Vaca as early as 1528, and the remnant of Hernando de Soto’s expedition under Luis de Moscoso had trekked through East Texas following his death in 1542, Spain made no claim to this land and was not interested in it since it offered no immediate prospects of finding gold. Spanish explorers of the sixteenth and seventeenth centuries were still looking for the “Seven Cities of Cibola.” When the French under La Salle landed on the coast of Texas in 1685, and built Fort Saint Louis on Matagorda Bay, Spain began to realize that she had no control of the Gulf Coast area north of the Panuco River in Mexico. This stimulated immediate action. In 1689 an expedition under Alonso de Leon and Father
Massanet was dispatched from Mexico to find and destroy the French settlement and to establish missions among the Tejas Indians in East Texas. In 1690 they found the ruins of the ill-fated Fort Saint Louis and pushed on into the Tejas country, establishing the first mission on a tributary of the Neches River in East Texas (Fig. 7) near the present town of Weches (Castañeda 1936, 1, 353). Though they had some success at first in Christianizing the Indians, crop failures and epidemic diseases and a reduction of French pressure caused the Spaniards to abandon the project, burn the mission, and withdraw from the Tejas country three years later.

Spanish complacency was jolted again in 1714 when the French explorer Saint Denis appeared on the banks of the Rio Grande, after having traversed the entire width of Texas unnoticed. Immediately a new expedition was organized to establish new missions and settlements among the Tejas, and in 1716 the first of the new missions was established near the site of the former Tejas mission of 1690. This was followed in order by missions built near Nacogdoches, near San Auguste, near the present town of Cushing, among the Caddo villages along the Sabine, and east of the Sabine near the French settlement of Natchitoches in Louisiana (Fig. 7). In 1719 a French expedition from Natchitoches destroyed the easternmost mission and the Spanish again withdrew from the Tejas country, but two years later they returned and rebuilt all missions west of the Sabine River. They also established a road, known as the Camino Real (later called the Old San Antonio Road) to connect these missions with Mexico. The missions built around San Antonio in the early part of the eighteenth century were way

![Figure 7. The Spanish missions of East Texas (after Castañeda).](image-url)
stations on this road. Some colonists from Mexico settled in the region at this time. When the Spaniards again withdrew from the East Texas region, their wooden buildings soon decayed so that today their locations are not exactly known. When France ceded Louisiana to Spain in 1762, the Spaniards no longer needed outposts in East Texas, and in 1776 the white population was removed to San Antonio. Three years later, however, several Spanish families returned to the Redlands area of East Texas and made a permanent settlement at Nacogdoches. Thus, whether Nacogdoches dates from 1716 or 1779, it is the oldest permanent settlement in East Texas. It was an outpost of European civilization in the forested wilderness when the English colonies were fighting for independence from European domination along the Atlantic seaboard.

ANGLO-AMERICAN PIONEER PERIOD

Spain returned Louisiana to France in 1800, and France sold the Louisiana Territory to the United States in 1803. With this acquisition of land east of the Sabine by the rapidly expanding new American republic, Spain soon realized that there would be greater dangers of invasion by Anglo-Americans than she had experienced from the French. Measures were taken immediately to strengthen her presidios in East Texas. During this period three unsuccessful expeditions were led into East Texas by Philip Nolan (1801), Magee and Gutiérrez (1813), and James Long (1819-21). Though these expeditions accomplished little, they doubtless influenced many Anglo-American pioneers to cross the Sabine from the Louisiana Territory after about 1820. Meanwhile Spain lost control of the entire region to the new Republic of Mexico in 1821. The next fifteen years under Mexican rule (1821-36) saw great numbers of Anglo-American colonists come to Texas. The first settlers continued along the Old San Antonio Road through Nacogdoches to the coastal prairie lands set aside for the Moses Austin Colony and for the Green DeWitt and Benjamin Milam empresario grants. Two of these empresario grants, however, were made to Hayden Edwards and to David Burnet, who agreed to settle several hundred families in the timbered parts of East Texas. This was the beginning of Anglo-American colonization in the timbered region. It may appear strange that the Mexican government would invite colonization of this Texas wilderness by aggressive Anglo-American pioneers, but Mexico apparently hoped to get these English-speaking frontiersmen
permanently anchored to lands in East and Central Texas so that they would not move farther southwestward into Mexico proper. Conflicts soon arose between the former Spanish-speaking settlers around Nacogdoches and the newcomers, and in 1826 Hayden Edwards led his colony to revolt against Mexico and established the short-lived Republic of Fredonia. This premature rebellion had its influence on the successful revolution of ten years later which ended in the establishment of the Republic of Texas.

Although it was natural to expect the English-speaking pioneers to keep their contacts with the United States, most Anglo-Americans who crossed the Sabine fully intended to become citizens of Mexico. If the government in Mexico City had been better organized, and had granted certain concessions to these new colonists, the Revolution of 1836 might never have occurred. Despite gathering war clouds, from 35,000 to 50,000 Anglo-American pioneers crossed into Texas between 1821 and 1836 (Texas Almanac 1958-1959, p. 58). While many of these went on beyond East Texas, a large number remained in the forested area because timbered lands held a greater appeal for them.

In addition to the early Spanish communities of Nacogdoches and San Augustine, numerous Anglo-American settlements were established during this period at Marshall, Jefferson, Kellyville, Center, Huntsville, Hemphill, Jasper, and elsewhere, and many isolated homesteads or plantations were carved out of the forested wilderness.

Organization of Counties. With the establishment of the Republic of Texas in 1836, counties were organized. Of the original counties of the Republic, those located in the East Texas region were Jasper, Liberty, Nacogdoches, Red River, Sabine, San Augustine, and Shelby. These seven counties covered all of East Texas and some of them extended into the prairies to the west. During the period of the Republic of Texas (1836-45) an additional five counties (Harrison, Houston, Montgomery, Bowie, and Rusk) were carved out of the original group, and in 1846, with the annexation of Texas by the United States and the forming of the state government, thirteen more counties were formed. Since that date, more than a hundred years ago, only ten new counties have been created in East Texas through the rearrangement of the old boundary lines (Fig. 8).

Pioneer Agriculture. The Anglo-American pioneer in East Texas made little change in his habitat from that of his original home in Kentucky, Tennessee, Georgia, Alabama, Mississippi, Louisiana, or
Arkansas. He had developed his agricultural economy in a humid subtropical climatic environment and hence was perfectly at home in the piney woods of East Texas. The major crops brought to this new land were corn and cotton—crops as well adapted to the new land as they were to the land he had left. As far as his experiences went, all farm land had to be won from the forest by cutting down trees, and hence the East Texas region presented no new problem. As a result much virgin timber in the area was destroyed by pioneer farmers who looked upon the forest as an enemy occupying lands that should be in crops. A few pioneer sawmills were established during this period, but the demand for lumber was not sufficient to encourage any large woodworking industries.

The Plantation Era. Prior to the Civil War, the planters from the Old South who moved into East Texas brought their Negro slaves and such farm equipment as could be transported over the poor roads. It was a natural thing that the plantation system should be established in this region, and East Texas developed many large plantations and some very famous ante-bellum plantation homes. By the 1840's, San Augustine had advanced from a frontier village of log cabins and crudely constructed huts to a town of finely proportioned and beautifully ornamented white homes (Bracken and Redway 1956, p. 70).

The best-developed plantations were in the Redland area of Central East Texas centering around Nacogdoches and San Augustine, but other important plantations were established in Northeast Texas around Marshall, Jefferson, and Clarksville. Those in the Redland area hauled their surplus ginned cotton by ox teams to Natchitoches, to Grand Ecore, or to Shreveport on Red River. Cotton moving from plantations in Northeast Texas went to Jefferson, where it was shipped by river steamer down the Red and Mississippi rivers to New Orleans. In the southeast some cotton moved to the Gulf Coast, but navigation on the Trinity, Neches, Angelina, and Sabine rivers was never satisfactory. Although cotton was the chief money crop of East Texas prior to the railroad period, almost half of the cultivated acreage was planted to corn, which was valued both as a food crop and as an excellent livestock feed. Wheat, grown largely in the drier, western part of the area, was ground into flour at small mills and distributed to local markets (Chambers 1941, pp. 9-10). Numerous fruits and truck crops were produced locally throughout the area, but because of transportation difficulties only cotton could be hauled economically by pioneer wagons.
Figure 8. Early county organization. Most East Texas counties were established before 1860.

over the long sandy or muddy roads to the river ports. These ports not only provided outside markets for cotton, but they also served to supply the pioneers of East Texas with manufactured goods and other necessities which they could not produce on the plantations. During this period, Jefferson, a river port on Cypress Bayou (Caddo Lake), became one of the two leading ports of Texas and a town of great significance to the economic development of the state. The coming of the railroads, which Jefferson tried to ignore, and the cutting of the log raft on Red River in Louisiana which caused the water level to drop at the port of Jefferson, started a decline in its importance as a market center from which it never recovered. In recent years, however, Jefferson has prospered along with the rest of East Texas and is today larger than when it was a major river port.

Pioneer Manufacturing. Although East Texas was primarily an
agricultural region, it became necessary for the pioneers to produce certain manufactured goods for their own needs, and manufacturing became locally important. The major industries were: food processing plants such as grist mills; local woodworking industries such as small sawmills, wagon works, plow works, and handle factories; and small iron foundries utilizing local iron ore to produce various iron products needed in this remote agricultural region. The first two of these industries need no further consideration at this point, but the development of an iron industry in East Texas during the last half of the nineteenth century and the first decade of the twentieth century should be described briefly, both as a historic episode in the economy of the region and as a forerunner of an important iron and steel industry in East Texas today.

Brown iron ore deposits occur in at least 22 of the counties of East Texas, but those that could be worked at a profit were restricted to small areas in Cass, Marion, Morris, and Cherokee counties. Iron ore, which occurs near the summit of the flat-topped, sand-covered hills of the region, is confined almost entirely to the Weches greensand formation. The most abundant type of ore is limonite or brown ore, a large part of which contained from 48 to 57 per cent iron in the North Basin and from 42 to 48 per cent iron in the South Basin (Fig. 9) (Eckel 1938, pp. 1-2). The first furnace was built in Cass County about 1855 near the town of Avinger, northwest of Jefferson. This furnace, which operated during the Civil War, was seized by Federal troops at the close of the war and was never reopened. Several other small furnaces and bloomeries were operated in Cass and Marion counties during the 1860's. In 1861 the Confederacy appropriated all the iron furnaces of Cass and Marion counties and operated them until the end of the war. In addition to the iron works run by the Confederacy, several private furnaces were constructed, including the Hughes furnace (1859) near Hughes Springs, and the Young's Iron Works, eight miles south of Jacksonville in the South Basin (Fig. 9). The Young furnace was constructed of brown sandstone, was 34 feet square at the base and 34 feet high, and cost between $6,000 and $7,000. Limestone was brought some eighteen miles to the furnace. Although it operated successfully for a while, producing pig iron and castings, it closed down soon after the Civil War (Eckel 1938, pp. 8-9).

In the South Basin, about eight miles south of Alto in Cherokee County, the Philleo (Filleo) furnace was built and ore was smelted
on a large scale during the Civil War. The ore and the charcoal used in the smelting process came from near the furnace and, according to reports, limestone was abundant only three miles away. The furnace, which was estimated to have cost about $55,000, produced nearly four tons of iron a day for several years, and may have employed as many as 300 men in the various workings. Smelting was discontinued, however, at the end of the Civil War and only the foundry business was continued. Other furnaces and bloomeries were built in the South Basin during the war period but their activities were similar to those mentioned above (Fig. 9).

Following the Civil War numerous new foundries were started. In 1869 one of the most interesting was established by G. A. Kelly about six miles northwest of Jefferson. This furnace went into blast in 1870 and operated almost continuously until 1886. Hot-blast charcoal soft foundry iron was produced, and according to reports the furnace was producing in 1874 as much as 1,000 pounds of pig iron a day. Financial difficulties caused this furnace to be sold in 1882 to the Marshall Car Wheel & Foundry Company, which began producing hard iron for casting car wheels. This furnace operated until 1886 but was shut down and finally dismantled in 1888.

In Cherokee County at Rusk (Fig. 9), the state of Texas established a penitentiary for the purpose of employing convict labor in making pig iron and related products. Construction of the "Old Alcalde" furnace was begun in 1883. It began operations in 1884, and continued in production, with intervals of shutdown, until 1909 when it went out of blast permanently (Eckel 1938, p. 11). During that time the furnace may have produced as much as 36,000 tons a year. Although operating mainly on charcoal, it was converted to coke in 1905. The apparent success of the state furnace led to the establishment during the late 1880's of three other furnaces: the Tessie Bell, at New Birmingham, a new industrial town near Rusk; the Star and Crescent furnace about a mile southeast of Rusk; and the Lone Star furnace at Jefferson. All three of these furnaces were abandoned in the first decade of the present century, and except for an occasional piece of rusty machinery, and a few old foundations and slag dumps, nothing is left to mark their sites.

The iron industry of East Texas ceased to exist in the early 1900's. Its decline and final collapse were brought about by several factors, including increasing costs of raw materials; competition from iron and
Figure 9. Some of the important early iron furnaces of East Texas that were in operation between 1855 and 1910. The modern Lone Star Steel Mill is also shown.

Steel producing regions from the outside, particularly the Birmingham (Alabama) district; and the small demand for iron products in East Texas. Though some industry had developed by 1910, no large local demands for iron and steel products existed until the discovery of the East Texas Oil Field in 1930.

The last three decades of the nineteenth century and the first ten years of the present century saw a great expansion of railroads in East Texas, as in the rest of the country. This period of railroad development not only changed the economy of many settlements such as Jefferson, but also started wholesale migrations of farmers from the relatively poor sandy lands of East Texas into the more fertile black prairie lands that were being opened up rapidly to settlement. Railroads also contributed to the development of the logging and lumbering
industry of this region, and to the expansion of a few other mineral industries such as salt mining at Grand Saline and the working of lignite deposits. Lignite, although not a good quality of coal, was mined in numerous places in East Texas and for a time was used extensively as a fuel by the railroads. The conversion to oil as a fuel for railroads closed down practically all of the lignite mines of the region.

THE RAILROAD ERA

After the Civil War, and particularly after the end of the Reconstruction period, railroad building in Texas began in earnest. Most railroads of East Texas were constructed during the last three decades of the nineteenth century and the first decade of the twentieth century (Fig. 10). Since 1910 several short lines have been built, but more lines have been abandoned. The building of railroads in East Texas had two profound effects on the economy of the region.

*Period of Migration to New Agricultural Lands.* Railroads gave access to the prairies to the west and south and thus facilitated the migration of pioneer agriculturalists to the more fertile lands. While census data are not sufficiently detailed to show the extent of this migration, it is evident that the rapid growth of the prairie cities such as Dallas, Fort Worth, and Waco, and of urban centers farther west, was at the expense of the older settlements in East Texas. General farming never was very successful: the poor sandy soils of the piney woods could not compete with the rich black-waxy prairie soils.

*The Logging and Lumbering Industry.* A second result of railroad building, however, was beneficial in that it attracted large lumber companies to the region and made it possible for them to build sawmills in the remote forest areas and yet be able to ship out the lumber cut from these forests. This period was one of rapid expansion of the logging and lumbering industry, as is shown by production figures in Table I.

While these figures are for the state of Texas as a whole, they tell clearly the production of the East Texas region since most of the lumber comes from there. The rapid increase in production from 1879 to 1899 when the total was more than one billion board feet shows the period of rapid development of the lumber industry. A slight recession occurred in 1905 but production continued high for some time. In 1907, 1909, and again in 1913 total production surpassed
EAST TEXAS: A TIMBERED EMPIRE

TABLE I

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<td>2,197</td>
<td>1927</td>
<td>1,210</td>
<td>1947</td>
<td>1,450</td>
</tr>
<tr>
<td>1908</td>
<td>1,495</td>
<td>1928</td>
<td>1,206</td>
<td>1948</td>
<td>1,400</td>
</tr>
<tr>
<td>1909</td>
<td>2,019</td>
<td>1929</td>
<td>1,173</td>
<td>1949</td>
<td>1,450</td>
</tr>
<tr>
<td>1910</td>
<td>1,827</td>
<td>1930</td>
<td>882</td>
<td>1950</td>
<td>1,583</td>
</tr>
<tr>
<td>1911</td>
<td>1,628</td>
<td>1931</td>
<td>506</td>
<td>1951</td>
<td>1,345</td>
</tr>
<tr>
<td>1912</td>
<td>1,834</td>
<td>1932</td>
<td>354</td>
<td>1952</td>
<td>1,488</td>
</tr>
<tr>
<td>1913</td>
<td>2,024</td>
<td>1933</td>
<td>501</td>
<td>1953</td>
<td>1,379</td>
</tr>
<tr>
<td>1914</td>
<td>1,510</td>
<td>1934</td>
<td>510</td>
<td>1954</td>
<td>1,287</td>
</tr>
<tr>
<td>1915</td>
<td>1,646</td>
<td>1935</td>
<td>631</td>
<td>1955</td>
<td>1,234</td>
</tr>
<tr>
<td>1916</td>
<td>1,707</td>
<td>1936</td>
<td>811</td>
<td>1956</td>
<td>1,145</td>
</tr>
<tr>
<td>1917</td>
<td>1,558</td>
<td>1937</td>
<td>953</td>
<td>1957</td>
<td></td>
</tr>
<tr>
<td>1918</td>
<td>1,204</td>
<td>1938</td>
<td>912</td>
<td>1958</td>
<td></td>
</tr>
<tr>
<td>1919</td>
<td>1,331</td>
<td>1939</td>
<td>1,010</td>
<td>1959</td>
<td></td>
</tr>
</tbody>
</table>


two billion board feet. From that peak year to 1929 there was a gradual decrease in production due to the fact that the best of the virgin timber, especially the longleaf pine, had been cut out and many large companies found it more profitable to move to other timbered areas of the United States than to reforest their holdings in East Texas. The big decline came with the depression of 1930, and for the next several years production was less than it had been since 1889. A revival of lumbering and woodworking industries began about the time of World War II. Production has continued to increase, although as yet no year since 1913 has shown the volume production of some years in the first decade of the present century.

Some of the early large sawmills of East Texas were the Trinity County Lumber Company mill at Groveton built in 1882, rebuilt in 1904 and operated continuously until 1930; the Angelina County Lumber Company mill at Keltys near Lufkin, built in 1887; the Southern Pine Lumber Company mill at Diboll, built in 1894; and the Kirby Lumber Company mill at Kirbyville, built in 1900.

Large-scale logging and lumbering industries developed so rapidly through exploitation of the extensive pine forest that "bigger and bigger mills were built, heavier and more destructive logging machinery was used in the woods, and as a result by the 1920's many mills were
being forced to close because of exhaustion of virgin timber supply." By 1934 the total number of sawmills in East Texas had been reduced to 175 from nearly 1,000 at the beginning of the century. Of the 175, only 29 had a daily capacity of 40,000 board feet (Bishop 1937, p. 4).

Some of the larger lumber companies made great efforts to homestead the cut-over and burned-over lands with farmers. Special trains loaded with home-seekers were brought into the area from the north and every type of promotional scheme was used, but few farmers settled in the area. The companies made soil tests, developed demonstration orchards and model farms, and even tried to keep the pine seedlings cleared out of this former timbered area, but the result was disappointing because the only crop they got was pine trees. In 1933 the entire idea was changed and the companies began to realize that pine was the best crop. Today much of this formerly denuded land is in tree farms which will provide timber resources for the future (Pulp and Paper 1956, p. 24).

The decline in the lumber industry in East Texas not only left a great amount of nearly worthless cut-over and burned-over land, but the abandonment of some of the mills and their company towns brought wholesale disaster to the communities that depended largely on the operation of sawmills. One writer, describing these "ghost towns" abandoned by some of the larger sawmills, says:

Little or no timber was grown on the cut-over land, and when the supply of sawlogs failed, the plant had to shut down. Sometimes a mill caught fire and burned when the timber reserve was too small to justify rebuilding. In either case, the employees were laid off, and the people scattered in quest of other work. As families left, the churches and schools declined, and houses were left unoccupied. Some of the buildings were sold and were moved away, while others burned in some woods fire or slowly tumbled down with decay. In this manner, communities of five hundred or a thousand inhabitants have disappeared. (Chambers 1952, pp. 72-73).

The decline of agriculture and of the logging and lumbering industry after a period of fantastic exploitation left much of East Texas destitute. True, there were a number of bright spots left where some of the better mills continued to operate, or where there was agricultural specialization, such as the growing of roses around Tyler, or of fruits and vegetables near Tyler and Jacksonville; but basically East Texas appeared destined to suffer continued abandonment and
Figure 10. The railroads of East Texas: (1) Texas and Pacific (two lines); (2) International and Great Northern (Missouri Pacific); (3) Saint Louis Southwestern (three lines); (4) Houston, East and West Texas (Southern Pacific); (5) Texas and New Orleans (Southern Pacific); (6) Gulf, Colorado and Santa Fe (two lines); (7) Moscow, Camden, and San Augustine.
perhaps ultimately to revert to the wilderness that it was before the coming of the Anglo-American pioneer.

This, however, was not to be. A new resource—oil—was to change the destiny of East Texas. Oil and gas not only brought additional wealth to the various communities, but also provided energy for new industries. Though oil was discovered in the Spindletop Field, in Beaumont, just south of the boundary of this region, in 1901, and this led to the discovery of a number of other fields in the coastal prairies and also in the timbered region of East Texas, nothing spectacular happened until the great East Texas Field was discovered in 1930. This field had such a profound influence upon the modern development of the whole East Texas region that its discovery marks the beginning of a new era. In the 1930's, at the time of the great world-wide depression, this discovery transformed a backward and economically depressed region into one of the few prosperous parts of the United States. One can only speculate as to what might have happened in East Texas during the depression had this great oil field not been discovered. The major oil fields of East Texas are shown in Table II.

### TABLE II

**MAJOR OIL FIELDS OF EAST TEXAS***

<table>
<thead>
<tr>
<th>Name of field</th>
<th>1957 production (thousands of barrels)</th>
<th>Cumulative production (thousands of barrels)</th>
<th>Number of wells</th>
<th>Acreage in field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conroe</td>
<td>6,412</td>
<td>368,546</td>
<td>792</td>
<td>11,600</td>
</tr>
<tr>
<td>Hull-Merchant</td>
<td>5,278</td>
<td>141,974</td>
<td>422</td>
<td>14,000</td>
</tr>
<tr>
<td>Liberty South</td>
<td>4,562</td>
<td>38,804</td>
<td>390</td>
<td>9,500</td>
</tr>
<tr>
<td>Sour Lake</td>
<td>1,407</td>
<td>99,145</td>
<td>278</td>
<td>13,000</td>
</tr>
<tr>
<td>Van</td>
<td>7,754</td>
<td>273,176</td>
<td>657</td>
<td>5,900</td>
</tr>
<tr>
<td>East Texas</td>
<td>69,067</td>
<td>3,293,758</td>
<td>19,244</td>
<td>135,500</td>
</tr>
<tr>
<td>Hawkins</td>
<td>14,773</td>
<td>226,881</td>
<td>608</td>
<td>12,500</td>
</tr>
<tr>
<td>Neches</td>
<td>3,165</td>
<td>10,174</td>
<td>270</td>
<td>6,500</td>
</tr>
<tr>
<td>Talco</td>
<td>4,179</td>
<td>160,599</td>
<td>656</td>
<td>9,000</td>
</tr>
</tbody>
</table>

*Oil and Gas Journal, January 27, 1958, pp. 167-68.

**DISCOVERY OF PETROLEUM AND NATURAL GAS**

Although petroleum and natural gas were known in the old Nacogdoches Field as early as 1865, little use was found for either during that pioneer agricultural period. Gas was considered worthless. The big oil rush that followed the discovery of Spindletop in 1901
led to additional exploration, but results were disappointing. The large Hull Field was discovered in 1918 near the southern margin of this region, but its supply went to the Gulf Coast cities. The beginning of the oil boom came with the discovery in 1929 of the Van Field in northeastern Van Zandt County.

The next year, however, was the big year, because on September 8, 1930, the first well of the spectacular East Texas Field (not to be confused with the East Texas Region, which contains other oil and gas fields, all smaller) was brought in. The discovery well was not phenomenal in its production, but it was followed within the next few months by three or four other producing wells, all of the 10,000 barrel class. By the early months of 1931 oilmen began to realize that here was no ordinary field, but one of the largest if not the largest in the world. The geological structure of the area had not looked promising; hence the major oil companies had neglected to secure large leases. When the magnitude of the field became evident it was too late for large lease-blocks to be made. Most of the field remained in small holdings varying from the size of a small town lot to backwoods farms of a few acres. This led to the drilling of many wells where a few would have been more economical (Fig. 11). The boundaries of the field were extended so rapidly that within the next year or two it measured some nine miles in width and more than forty miles in length, and every acre of land within its area of approximately 300 square miles was productive of oil. Furthermore, the producing horizon was only about 3,500 feet below the surface, so that drilling was inexpensive. As a result nearly everyone who owned land in the field drilled one or more oil wells. Within the next nine years nearly 27,000 wells were drilled and only 563 of them were dry. The East Texas oil field area had gone wild. Production in this area was much greater than consumption, particularly in the depression days of the early 1930's, and the volume of oil from this field was ruining the petroleum industry in Texas and throughout the nation. Oil that had sold for $1.10 a barrel in 1930 dropped to 10 cents a barrel by the following spring. Something had to be done. For the first time petroleum production was placed under the control of the Texas Railroad Commission, which worked earnestly to try to bring order out of chaos. After making many mistakes in dealing with proration—an idea that was not popular with small producers—the Commission finally developed a plan for future oil conservation by determining the
daily allowable for each well and by planning the proper spacing of wells in future oil fields. The debacle of the East Texas Field, which played havoc with the oil industry, caused the entire national petroleum industry to consider carefully the future of production. There never had been, and it seems reasonable to assume now that there never will be, another field developed like East Texas (White and Foscue 1954, pp. 175-78).

The waste in oil and natural gas was staggering, but in time this was brought under control. Today, nearly three decades after the original discovery, the East Texas Field is still an important producer of oil and gas and a big factor in the development of the industrial areas in Tyler, Kilgore, Longview, and other smaller centers.

The opening of this field led to an intensive search for oil and gas throughout East Texas, and within the next several years other important fields became productive. One of the most important of these was the Carthage natural gas field which produced no petroleum but a gigantic supply of gas. This field, second only to the Texas Panhandle gas field, was destined to be the chief supply area for the large pipelines that
were built during and after World War II to connect this producing area with the cities of the North and Northeast. As a gas collecting and recycling center, Carthage has progressed from a small agricultural town to a prosperous and thriving small city. This type of transformation has taken place throughout East Texas wherever gas or oil have been available to attract industry.

The development of the large East Texas Field and the many smaller but locally important fields in the region provided a great amount of wealth to an area that was economically in the doldrums, and also caused an increase in the population. Census figures from 1930 to 1950 (Table III) show this rapid growth in the population of all towns that profited from the oil boom. The rough, almost frontier-like oil towns of the 1930's became well organized communities by 1940. Some growth was ephemeral, but the people who remained in an oil field area, after the wild drilling orgy was over, usually represented solid citizens who made many contributions to their habitat. In addition, many of the older families in the region found themselves in possession of large fortunes that they would never have acquired from any other local resource. Some of these left the area when they secured new wealth, and cities such as Houston, Dallas, and Fort Worth profited from that move; but those who stayed made definite plans to improve their homeland. Possibly no region of comparable size in the

<table>
<thead>
<tr>
<th>Date</th>
<th>Longview</th>
<th>Lufkin</th>
<th>Marshall</th>
<th>Nacogdoches</th>
<th>Palestine</th>
<th>Texarkana and (Texas and Arkansas)</th>
<th>Tyler</th>
</tr>
</thead>
<tbody>
<tr>
<td>1850</td>
<td>368</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1860</td>
<td>485</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1870</td>
<td>1,920</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1880</td>
<td>1,525</td>
<td>5,624</td>
<td>333</td>
<td>2,997</td>
<td>3,223</td>
<td>2,423</td>
<td></td>
</tr>
<tr>
<td>1890</td>
<td>2,034</td>
<td>529</td>
<td>1,138</td>
<td>5,838</td>
<td>6,380</td>
<td>6,908</td>
<td></td>
</tr>
<tr>
<td>1900</td>
<td>3,591</td>
<td>1,527</td>
<td>7,855</td>
<td>1,827</td>
<td>8,297</td>
<td>10,170</td>
<td>8,069</td>
</tr>
<tr>
<td>1910</td>
<td>5,115</td>
<td>2,749</td>
<td>11,452</td>
<td>3,369</td>
<td>10,482</td>
<td>15,445</td>
<td>10,400</td>
</tr>
<tr>
<td>1920</td>
<td>5,713</td>
<td>4,878</td>
<td>14,271</td>
<td>3,546</td>
<td>11,039</td>
<td>20,737</td>
<td>12,085</td>
</tr>
<tr>
<td>1930</td>
<td>5,036</td>
<td>7,311</td>
<td>16,203</td>
<td>5,687</td>
<td>11,445</td>
<td>27,366</td>
<td>17,113</td>
</tr>
<tr>
<td>1940</td>
<td>13,758</td>
<td>9,567</td>
<td>18,410</td>
<td>7,538</td>
<td>12,144</td>
<td>28,840</td>
<td>28,279</td>
</tr>
<tr>
<td>1950</td>
<td>24,502</td>
<td>15,135</td>
<td>22,327</td>
<td>12,327</td>
<td>12,503</td>
<td>40,610</td>
<td>38,968</td>
</tr>
</tbody>
</table>

United States has exhibited such a rapid and complete transformation in so short a time.

Had this been the end result of the new wealth—a wealth derived from an exhaustible resource—this new era in East Texas would have had only a temporary effect and in time the region might have returned to the economic backwoods. The magnitude of the petroleum reserve and the great supply of natural gas, however, offered industry an attraction which firmly launched the region on its new era.

The processing of oil and gas products through the building of refineries and natural gas recycling plants represents an important industry in the region (Fig. 12), even though the number of workers employed in each plant is nominal. The gathering and transporting of natural gas from East Texas fields to distant regions of the country is also an important development for the region.

Two former industries, iron and steel making and logging and lumbering, were revived and enlarged, and many new and highly specialized industries have been attracted to East Texas by the abundance
of cheap fuel available. Before these are discussed, however, the revival of agriculture through specialization will be considered.

DECLINE IN COTTON PRODUCTION

One of the great transitions in agriculture throughout much of the Cotton Belt Region in recent years is the decline of cotton as a dominant crop and the replacement of some of its former acreage by specialty crops, pasture grasses, or forests. Throughout the Old South cotton production has been shifting from lands of submarginal production to more productive areas such as the Mississippi and Red River valleys of Arkansas, Louisiana, and Mississippi, or the High Plains of West Texas.

Although East Texas has been an important cotton producer since before the Civil War, it could not compete with the more productive areas after modern mechanized methods had been developed. As one travels through East Texas today, few fields of cotton are seen. Of the twenty-four East Texas counties ginning more than ten thousand bales of cotton in 1916 or 1926 (peak years for cotton production) only

<table>
<thead>
<tr>
<th>Table IV</th>
<th>DECLINE IN COTTON GINNED (BALES) IN SELECTED COUNTIES OF EAST TEXAS BY DECADES, 1916-1956*</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>1916</td>
</tr>
<tr>
<td>Anderson</td>
<td>19,815</td>
</tr>
<tr>
<td>Angelina</td>
<td>3,583</td>
</tr>
<tr>
<td>Bowie</td>
<td>26,556</td>
</tr>
<tr>
<td>Cass</td>
<td>24,728</td>
</tr>
<tr>
<td>Cherokee</td>
<td>20,487</td>
</tr>
<tr>
<td>Gregg</td>
<td>10,285</td>
</tr>
<tr>
<td>Harrison</td>
<td>21,285</td>
</tr>
<tr>
<td>Henderson</td>
<td>18,192</td>
</tr>
<tr>
<td>Houston</td>
<td>19,129</td>
</tr>
<tr>
<td>Morris</td>
<td>9,885</td>
</tr>
<tr>
<td>Nacogdoches</td>
<td>12,743</td>
</tr>
<tr>
<td>Panola</td>
<td>16,068</td>
</tr>
<tr>
<td>Polk</td>
<td>7,421</td>
</tr>
<tr>
<td>Red River</td>
<td>40,936</td>
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<td>Rusk</td>
<td>25,192</td>
</tr>
<tr>
<td>San Augustine</td>
<td>6,167</td>
</tr>
<tr>
<td>Shelby</td>
<td>15,790</td>
</tr>
<tr>
<td>Smith</td>
<td>32,123</td>
</tr>
<tr>
<td>Titus</td>
<td>12,839</td>
</tr>
<tr>
<td>Trinity</td>
<td>4,289</td>
</tr>
<tr>
<td>Upshur</td>
<td>19,516</td>
</tr>
<tr>
<td>Van Zandt</td>
<td>29,083</td>
</tr>
<tr>
<td>Walker</td>
<td>10,649</td>
</tr>
<tr>
<td>Wood</td>
<td>23,638</td>
</tr>
</tbody>
</table>

two produced more than that number in 1956 and nine had ceased producing cotton entirely. The decline in the major agricultural commodity was accompanied by a decline in rural population and the amount of land under cultivation.

REVIVAL OF AGRICULTURE THROUGH SPECIALIZATION

Fruit and Truck Crops. Sections of East Texas, particularly Cherokee and Smith counties, have been important producers of deciduous fruits for many years, although severe frost damage has caused production to decline. Peaches, plums, watermelons, cantaloupes, and berries were especially important. The major peach producing areas were centered around Jacksonville, the plum area around Jacksonville and Palestine, and the blackberry area around Lindale (Smith County). Watermelons and cantaloupes are grown rather generally throughout the northern and central part of East Texas. Tomatoes are grown over large areas of the Cherokee County district, and sweet potatoes (yams) are produced in considerable quantities in Upshur and adjoining counties. A sweet potato "Yamboree" is held each year in Gilmer (Upshur County). None of these crops, however, is outstanding today in Texas agricultural production figures.

Roses. Smith County and parts of the adjacent counties have developed a highly specialized type of agriculture devoted entirely to the growth of rose nursery stock. From the close of World War II to 1954 the rose industry increased from 15 to 40 per cent of the farm sales of Smith County. Within a radius of fifty miles of Tyler are produced more than 60 per cent of the garden rose bushes of the United States. Each year about six hundred carloads of rose bushes are shipped from Tyler to all parts of the country, most of them being sold to wholesale distributors (Monthly Business Review 1956). Shipments of cut roses are being made by air at an ever increasing rate. So important has the rose industry become to this area that a Rose Research Foundation has been established in Tyler and an annual Rose Festival is held each autumn to promote the industry. Much of the sandy, loamy land now in rose culture was formerly devoted to cotton, but the standard of living of the farmers growing roses is much higher than was that of the cotton farmer.

Livestock Industries. For a number of years the livestock industry of the United States has been invading the timbered areas of the
Cotton Belt Region. Many cotton farms have become pastures supporting large herds of beef cattle or dairy cattle. East Texas with its forested landscape is a far cry from the Texas commonly portrayed by cinemas and novels, but in recent years this region has become one of the leading producers of beef. A recent study of the beef cattle industry of the state showed that of the twelve crop reporting districts, all but two or three had lost cattle within the past ten years in amounts varying from 100,000 to 200,000 head, but the East Texas crop reporting districts (Fig. 4-F) increased their beef cattle population in that same period by more than 200,000 head. Abundance of moisture and improvements in pastures through the introduction of new grasses adapted to the sandy and clayey soils have been important factors in the eastward shift of the cattle industry. Sometimes it appears incongruous to see herds of Brahman, Hereford, or Angus cattle grazing among the pine trees of East Texas, but ranching has become an important industry for the region. Cattle auctions are held regularly at such former agricultural centers as Nacogdoches.

In several localities, particularly near the larger centers of East Texas, dairy herds replace beef cattle. But since the major cities of Texas lie outside this region, the larger dairy farms tend to be near those cities and hence outside the limits of this region.

Poultry raising has also developed rapidly in the piney woods. The chief centers are in Cherokee, Shelby, Nacogdoches, and Tyler counties, but broiler houses are found scattered throughout the region. Chickens are sent to near-by cities and also to distant markets, particularly in the Far West and in the Southeast. Egg production is also important, but it is secondary to the raising of broilers. Between 1950 and 1954, while other forms of agricultural production in the region were either declining or increasing very slowly, poultry production was increasing at an astronomical rate. Cherokee County, one of the major centers, showed an increase of 270 per cent in poultry products from 1949 to 1954, and a twentyfold increase in the value of broilers sold. Nacogdoches County had a 566 per cent increase in poultry produced, Tyler County showed a twelvefold increase in poultry income, and Shelby County, the largest producer in East Texas, registered a soaring 954 per cent income increase. In 1949 poultry accounted for less than 10 per cent of the total farm income in this area, but by 1954 it produced 64 per cent of the total farm income. Throughout East Texas broiler production is being accelerated to meet the demand of
rapidly-growing regional markets, and further expansion should be expected (*Water for the Future* 1959, III, 81, 157, 174-75, 264).

The agricultural readjustments in East Texas within recent years have been profound, and while they have resulted in a decrease in total acreage under cultivation and the almost complete disappearance of cotton, the former staple crop, mechanization, specialization, and greatly improved transportation have made it possible for the agricultural population to develop a much higher standard of living. In many parts of the region a person can operate a farm and at the same time work in a factory for supplemental income. Industrial development, in turn, is creating an expanding market for farm produce, and its future expansion will undoubtedly consummate a closer partnership between farm and factory (*Water for the Future* 1959, I, 99-100).

**RECLAMATION**

The last decade of the nineteenth century and the first three decades of the twentieth century were years of reckless exploitation. The chief offender was the logging and lumbering industry, which from the early 1900's until the period of the great depression cut down the trees as rapidly as possible, then abandoned the land and moved on to other forests. This was the general practice, although some of the larger mills attempted to reforest the land. Deforestation was accompanied by soil erosion and depletion, and also by a great waste in surface waters through excessive runoff on land denuded of its vegetation. Reckless forest clearing and over-cropping gave East Texas a desolate outlook in the early 1930's.

*Forest Conservation and Reclamation.* Of the approximately 19 million acres in the East Texas region, 11.6 million acres are in forest land. This means that more than 60 per cent of the region will grow trees. In considering the forest potential, the region is divided into a northeastern part (counties lying north of the southern boundaries of Houston, Angelina, San Augustine, and Sabine counties), and a southeastern part. The northeastern part of the East Texas forest is composed largely of oak-pine forests with a small amount of loblolly-shortleaf pine, while the southeastern part is dominantly loblolly-shortleaf pine and longleaf-slash pine (Fig. 3). Since the northeastern part was settled during the pioneer period by agriculturalists who operated small saw-mills to supply local needs, while the southeastern part remained a wilderness until the large lumber mills began exploiting the pine forests,
the northeast area suffered the greater loss in forest and soil. Although thousands of acres of cut-over and burned-over land existed in the domain of the large lumber companies, some of these large holdings were scientifically cut from the beginning. In Southeast Texas today pine sawtimber growth annually exceeds the sawtimber cut by 129 million board feet, while in Northeast Texas pine sawtimber growth is less than that cut by 18 million board feet.

In a recent survey of the East Texas forests conducted under the joint sponsorship of the Southern Forest Experiment Station, the Texas Forest Service, and several private industries such as Champion Paper & Fibre Company and Southern Pine Lumber Company, the following needs of the East Texas forests were recognized (East Texas Forests 1956):

1) Necessity for improving cutting practices on small holdings.
2) Planting some 2,000,000 acres in Northeast Texas which cannot restock naturally.
3) Deadening many cull hardwood trees to allow better growth of pine.
4) Strengthening and expansion of forest fire protection.
5) Providing for greater insect and disease protection.
6) More completely utilizing the trees harvested.

Soil Conservation. Much has been written about the work of the Soil Conservation Service and how it has helped farming areas throughout the United States. East Texas has had its share of this improvement. Deforestation and the constant cultivation of the farming areas through a single row-crop type of cotton farming, together with a heavy rainfall on hilly lands, produced a maximum of soil erosion and soil depletion. Although this region was not damaged as much as sections of the Southern Piedmont in the Carolinas and Georgia, it was nevertheless one of the badly eroded areas of the South. During the 1930’s several soil conservation districts were established in East Texas. The shift in type of agriculture from cotton to more intensively-farmed crops, or to pasture, together with the abandonment of some agricultural lands in favor of tree farming, has done much to control soil erosion.

Water Conservation. The East Texas region has been blessed by an abundant rainfall (Fig. 4-B) varying from 40 to 55 inches on the average each year. This has been of great value in developing the forests and in furnishing sufficient moisture for agriculture, as well as providing industrial waters for many new industries, but it has also been
Figure 13. Major reservoirs of East Texas, completed, under construction, or authorized by the Corps of Engineers, United States Army: (A) Texarkana Reservoir (completed); (B) Ferrells Bridge Reservoir (under construction); (C) Mooringsport Reservoir (authorized); (D) McGee Bend Reservoir (authorized); (E) Rockland Reservoir (authorized); (F) Town Bluff Reservoir (completed).
a great contributor to soil erosion and to destructive flooding of bottom lands. In addition, millions of gallons of water have raced down the numerous streams and emptied into the Gulf of Mexico without providing needed water to communities or industries.

Although the need for impounding water to prevent floods and to conserve the surplus for domestic and industrial uses has been felt by each community, water conservation has not been practiced systematically. Ample rainfall, abundant subsurface water, and springs have kept East Texas from being deficient in water, and the surplus runoff each spring has been considered a normal occurrence. In addition, the owners of much of the best farming land in the bottom areas did not want their land submerged beneath large reservoirs. Perhaps the chief reason, however, for the retardation of flood control along the major streams has been a lack of capital. Finally, some of the major projects were taken over by the United States Army Corps of Engineers and shortly thereafter construction was begun on the first of a series of large reservoirs in East Texas (Fig. 13).

These large reservoirs, together with many smaller ones owned by municipalities or industries, provide East Texas with ample domestic and industrial waters for the future and set this region of the state apart from the drier western parts as an area with an abundance of water. Perhaps more than any other single factor, this abundance of water has been a major force in the remarkable industrial development of East Texas, particularly in the years following World War II.

Still another result of the creation of these large reservoirs in the heart of the forested region has been the development of a resort industry. Inland fresh-water lakes, situated in picturesque woodlands, provide many recreational opportunities for the vacationist who wishes to engage in fishing, hunting, boating, water-skiing, or camping. As yet, relatively few accommodations for tourists have been provided on these lakes, but in time private interests, state interests, and the National Forest Service will build them. As a resort area East Texas probably cannot compete with the mountainous forest regions of the nation, but it can develop better recreation facilities for the local population, and for the near-by cities of Houston, Dallas, and Fort Worth.

**MODERN DEVELOPMENT OF THE IRON AND STEEL INDUSTRY**

One of the earliest industries of East Texas was the manufacture
of iron. This industry began prior to the Civil War, reached its climax about the beginning of the twentieth century, declined rapidly thereafter, and became defunct about 1910. Although practically no iron was produced after the "Old Alcalde" furnace near Rusk shut down in 1909, the steel industry kept certain lands under lease and continued to search for new ore deposits.

Figure 14. The Lone Star Steel Mill near Daingerfield. (Courtesy Lone Star Steel Co.)
Early in World War II, the United States government, recognizing the necessity of developing every major deposit of iron ore, built a blast furnace, coke ovens, and related facilities at the town of Lone Star in Morris County. At the same time the Lone Star Steel Company was incorporated under the laws of the state of Texas to operate this mill. At the end of the war the plant became surplus property. On January 1, 1948, the Lone Star Steel Company bought the plant at Lone Star, as well as iron ore lands in East Texas and coal mines in Oklahoma. In 1950 a foundry was completed for the production of cast iron pressure pipe, and in 1951 the company began expanding the plant into a completely integrated steel mill. In 1957 an eight-million-dollar expansion program was begun, to include the construction of a fifth open hearth furnace, capable of boosting the ingot steel capacity by 25 per cent; a stretch-reducing mill which will greatly increase the supply of tubing for oil and gas wells; and a modern bar mill to supply reinforcing steel for the construction industry (Fig. 14).

The Lone Star mill is in the area of the old iron furnaces, about ten miles west of the original furnace at Avinger, in Cass County. The ore is also the same, although modern beneficiating processes enable it to be concentrated to some extent before it is used. The early industry relied on wood for charcoal to smelt the iron, while the present plant secures coal from mines in southern Oklahoma about 250 miles away and converts it into coke at the mill. Where local limestone was once used, this is now brought in from quarries near Cisco in Central Texas about 200 miles to the west. Fuel for the pioneer mills was secured locally, chiefly from wood. The fuel used today, chiefly gas, is also secured locally from the numerous gas fields of East Texas. Transportation, of course, is much improved since the 1860's. The greatest difference between the two industries, however, lies in the development of the surrounding territory. The demand for iron and steel by the oil industry and the construction industry now offers Lone Star Steel Company a market that was undreamed of as late as 1909 when the last of the old furnaces shut down permanently.

Though the Lone Star mill is by far the most important iron and steel development of East Texas and the only completely integrated mill in the region, a new competitor has developed in the southern ore basin of Cherokee County. This new industry was established at Rusk, in practically the same locality where the "Old Alcalde" furnace operated until 1909. During World War II, the Sheffield Steel Company
built a completely integrated steel mill on the Houston Ship Channel at the industrial suburb of Pasadena. It has expanded many times since that date, and is constantly extending its search for additional ores. The beneficiating plant at Rusk now supplies the Pasadena mill with a large part of its ore. Recently a small furnace was constructed at the Rusk beneficiating plant to produce about 100 tons of pig iron a day. With this iron ore district an integral part of the Sheffield mill in Houston it seems unlikely that any other completely integrated steel mill will be built in East Texas.

Numerous small foundries, fabricating many kinds of iron and steel products, are found within the region; but none can be considered a part of the steel industry.

MODERN WOOD-PRODUCTS INDUSTRIES

Lumber Mills. As has been noted, the logging and lumbering industry reached its peak of production by 1913 (Table I) and began to decline after that date until it almost ceased to exist during the depression years of the 1930's. Most smaller sawmills closed down, abandoned their holdings, and destroyed their mills. A few of the larger mills continued to operate during the depression, building up their holdings and restocked their forests. These mills are today the major lumber producers of the region. Table V, which shows the number of sawmills operating in East Texas in 1959 and the total monthly capacity of these mills, reveals the concentration of the industry in about six counties (those with a monthly capacity of more than five million board feet). Many smaller mills, however, are in operation in the other counties, and these aggregate a large total monthly capacity. Some of the major lumber mills of the region are: Angelina Lumber Company at Keltys (Angelina County), Southern Pine Lumber Company at Diboll (Angelina County), Southern Pine Lumber Company at Pineland (Sabine County), and Kirby Lumber Company at Silsbee (Hardin County). These mills are producing both hardwood and pine lumber, and are making numerous specialized wood products as well as supplying chips for the pulp mills of the region. Each is thoroughly modern, and since all are similar in appearance, only the Southern Pine Lumber Company at Diboll will be described as an illustration.

The Southern Pine Lumber Company Mill located at Diboll is one
of the oldest lumber mills in East Texas (Fig. 15), having been founded in 1893 by Thomas L. L. Temple, who in 1910 built the Temple Lumber Company mill at Pineland in Shelby County. In 1956 this mill also became a part of the Southern Pine Lumber Company, which is a part of the Temple Industries. Lumber manufacturers, such as those in charge of the mill at Diboll, who were foresighted enough to sense the potential wealth of the East Texas forest, and who recognized the need for forest conservation, took steps to conserve and replant their forest holdings as they were used. In time they learned to follow the most advanced methods of forestry and employed professional foresters.

**TABLE V**

**Estimated Lumber Production by East Texas Counties, January 1, 1959**

<table>
<thead>
<tr>
<th>County</th>
<th>Active Mills</th>
<th>Southern†</th>
<th>Hardwood†</th>
<th>Other†</th>
<th>Total†</th>
</tr>
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<tbody>
<tr>
<td>Anderson</td>
<td>2</td>
<td>252</td>
<td>210</td>
<td>462</td>
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<td>Angelina</td>
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<td></td>
<td>65</td>
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<td>Cass</td>
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<td>126</td>
<td>651</td>
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<tr>
<td>Franklin</td>
<td>5</td>
<td>12</td>
<td>126</td>
<td>138</td>
<td></td>
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<tr>
<td>Gregg</td>
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<td>168</td>
<td></td>
<td>168</td>
<td></td>
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<tr>
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<td>1,155</td>
<td>546</td>
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<td>2,079</td>
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<tr>
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<td>Titus</td>
<td>4</td>
<td>168</td>
<td>14</td>
<td>—</td>
<td>315</td>
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<td>273</td>
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<td>693</td>
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<td>2,877</td>
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<td>210</td>
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<td>—</td>
<td>1,428</td>
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<tr>
<td>Wood</td>
<td>5</td>
<td>21</td>
<td>294</td>
<td>—</td>
<td>315</td>
</tr>
</tbody>
</table>

*Data supplied by Paul R. Kramer of the Texas Forest Service, Lufkin.
†Total monthly capacity (thousands of board feet, lumber tally). Other includes: basket, box and crate, chair, cooperage, fence, flooring, furniture, handles, lath, pallet, prefab houses, plywood, slat, veneer and plywood.
to mark trees for cutting. For many years, now, only trees so marked have been harvested. As a result the annual harvest no longer exceeds the annual growth, and the company’s forests are healthier and more abundant each year than they were the year before. Trees of large girth are cut for sawlogs, while tall slim trees are cut for poles. Tree tops and faulty small trees are collected and made into chips to be sold to the pulp mills. Logs are mechanically loaded in the forest and transported by trucks to the company railroad lines which run the entire length of the company lands. These in turn transport the logs to the mill. The mill is almost entirely automatic. Logs are stripped of their bark and then sawed to exact thicknesses, widths, and lengths so that when the rough lumber is carried to the sorters it is separated according to dimensions into individual piles, and later moved mechanically to automatic stackers and into the dry-kilns. The temperature is carefully regulated in the dry-kilns and the heat is circulated uniformly. The amount of moisture left in the boards is controlled electronically. From the kilns the seasoned lumber moves to a storage shed, and is then sent to the planers where it becomes dressed lumber. Finished lumber then
moves to a "dressed shed," capable of storing six and one-half million feet of lumber, all in small packages readily accessible for shipment. Slabs cut from logs, formerly considered waste material, are now carefully seasoned and sent to the Temple-White Company near by for manufacture into mop and broom handles. Those that cannot be used for this purpose are cut into small chips and are sent to the Southland Paper Mill at Lufkin. Other former waste products such as sawdust now find their way into various wood products so that the mill uses nearly all of each tree cut from the forest.

**Pulp and Paper Mills.** The first pulp and paper mill to be built in East Texas was located in Orange, a short distance southeast of the border of this region. In 1910 the Orange Pulp and Paper Company began manufacturing unbleached pulp and paper from pine trees cut in East Texas. After operating for a number of years the mill was closed, but it was recently reopened without pulp-making facilities. It now buys annually some 12,000 tons of unbleached wet sulphate pulp from the new East Texas Pulp and Paper Mill at Evadale, and it also imports small quantities of pulp. This mill specializes in the manufacture of lithographed kraft paper bags and sells practically its entire output to large department stores in New York and Boston (Kirksey 1959, p. 108).

For a long time southern yellow pine was considered inferior to northern spruce in the manufacture of bleached pulp and white paper, because of its high resin content. Experimentation at the Wood Products Laboratory in Savannah, Georgia, proved that southern yellow pine would make good bleached pulp if cut while it was less than fifteen years of age—before it developed any large quantity of resin. This discovery led in 1940 to the establishment at Lufkin of the Southland Paper Company mill—the first mill in the South to make newsprint.

Soon another large pulp and paper mill, built at Pasadena on the Houston Ship Channel by the Champion Paper and Fibre Company, began manufacturing high-grade book papers from southern yellow pine primarily for *Time, Inc.*, the publisher of *Time, Life,* and *Fortune* magazines. This mill lies outside the boundary of East Texas as considered in this study, but indirectly it led to the establishment of another large mill at Evadale. The East Texas forests are the source of supply of pulp logs, not only for these four Texas pulp and paper mills, but also for mills in Louisiana and Arkansas.

The Anglo Southern Paper Corporation, an associate of the Anglo
Canadian Pulp & Paper Mills, Ltd., has announced plans for the construction of a $60,000,000 pulp and paper mill to be located in northeast Texas some eight miles northwest of Texarkana (Dallas Times Herald 1960).

The East Texas Pulp and Paper Mill owes it origin to circumstances connected with the contract that Time, Inc. had with the Champion Paper and Fibre Company mill at Pasadena. The Houston Oil Company, which provided fuel for the Champion mill, had for years been a joint owner with the Kirby Lumber Company of large areas of cut-over and burned-over timber land in southeast Texas. In the early 1930's the Houston Oil Company attempted to settle this land with farmers, but in 1938 it gave up that idea and began replanting the land in pine. Champion and Time were considering building another pulp mill in southeast Texas after the close of World War II, but in a short time Champion let its option expire. This left the mill at Evadale to be built entirely by Time in partnership with the Houston Oil Company, which still owned the timber land that was to supply most of the pulp wood. Though Time, Inc., bought out the interests of Houston Oil and is now the sole owner of the Evadale mill, it is still the best customer for the Champion mill's high-grade paper. Recently, Time purchased the interest of the Houston Oil Company in the forest lands of their former Southwestern Settlement and Development Company, and thus acquired outright some 600,000 acres. The mill, however, does not make high-grade book paper for the magazine; Time, Inc., still buys most of its book paper from the Champion Paper and Fibre Company in Pasadena.

The East Texas Pulp and Paper Mill began operating in 1954 in a large, modern plant (Fig. 16) covering some fifty acres of formerly forested lands near Evadale. This mill is capable of producing more than four hundred tons of bleached market pulp and paper daily. Market pulp is shipped to paper mills that do not make their own pulp, while the heavy-weight paper is used primarily in the manufacture of milk containers, cups, cans, plates, trays, tags, folders, and similar paper products. The mill uses annually more than 200,000 cords of pine and hardwood pulp logs (Fig. 17) cut from its own land and purchased from individual owners, and buys the equivalent of 40,000 cords in the form of chips from the Kirby Lumber Company at Silsbee. Over 23,000,000 gallons of water, secured from eight deep wells, are used daily. No water is taken from the near-by Neches River, although the
treated waste is returned to the river below the intake for the water supply of Beaumont. The mill employs nearly five hundred workers and has an annual payroll of over two million dollars.

Pulp logs are delivered to the wood yard at one end of the plant, and are carried by chain conveyor to the barking drums, where the bark is removed. They are then sent to the chipper, which reduces them to three-quarter inch chips. Chips are placed in the digesters (giant pressure cookers) and are cooked for several hours in a chemical liquor, to dissolve the nonfibrous materials in the wood. The resulting mass of brown fibers, or pulp, is washed, screened, thickened, and chemically bleached until it is white. The bleached pulp is again washed and pumped to the paper machine room. Here it flows onto a moving wire mesh of the Fourdrinier paper machine, which drains off the water. Finally it passes through many rollers and driers and

Figure 16. The East Texas Pulp and Paper Mill at Evadale. This modern mill, owned by *Time, Inc.*, which uses annually more than 200,000 cords of pulp logs cut from its own timbered lands, is capable of producing over 400 tons of bleached pulp and paper daily. (Courtesy East Texas Pulp and Paper Co.)
Figure 17. The wood lot at the East Texas Pulp and Paper Mill. The crane is dragging pulp logs off the railroad car into the flume. Washed logs are then transported by chain conveyor to the barkers. The stacks of wood on each side of the flume are more than 750 feet long. (Courtesy East Texas Pulp and Paper Co.)
emerges as a seventeen-foot-wide sheet of pulp or paper at the other end of the machine (Fig. 18). If the final product is to be marketed as pulp it is cut into sheets and bailed for shipment. If it is to be marketed as paper or paper board, it is further treated by adding sizing and other materials and is then shipped in rolls or sheets to manufacturers who use it to make cartons, cups, and other paper products. With ample room for expansion, and with a constantly increasing demand for paper products, this modern mill will undoubtedly continue to expand. The extensive holdings of the company, under scientific forest management, coupled with the additional supplies of chips that can be secured from numerous East Texas sawmills, make the supply of basic raw materials almost inexhaustible. Replanting of forest lands has made it possible to grow sawlog timber faster than it is used.

Other Wood-Products Industries. One of the oldest woodworking industries of East Texas is the making of railroad cross ties. Though...
the great demand for ties came during the period of railroad building before World War I, there is always the replacement factor to be considered, and the cutting of ties continues to be important since no substitute has been found with the resilience of wood. Originally pine ties lasted only two or three years and had to be replaced; those made of hardwood, chiefly white oak, lasted somewhat longer. Treating ties with creosote or other wood preservatives increases their life considerably, but replacements are still necessary. Formerly all ties were hand-hewn by laborers known as "hackers." Though that activity is still carried on in the piney woods, most ties today are sawn, seasoned, and treated at the mill, before being sold. As late as 1945 over four million ties with a value of about $4,000,000 were cut (Cross Ties 1954). Creosoting plants became important also for preserving poles, posts, and pilings. In this region there are nineteen wood preserving plants, two of which are operated by railroads, and most of which are of the pressure type. Trees cut for piling and poles are peeled of their bark in the woods, then transported by rail or truck to the treating plant. Before being treated they are air-seasoned for several months so that any cracks that might develop can be thoroughly impregnated with the preservative.

Another important wood-products industry is the making of veneer and plywood. Hardwood logs are peeled into sheets of thin veneer after they have been stripped of their bark and heated to soften the wood. The veneer is then dried and glued together under heavy pressure. The final product of three or more ply is much stronger than a single piece of wood of the same thickness. Most fruit and vegetable baskets and containers are made of veneer, but a lower quality of wood can be used for these products. A recent census listed some forty-six Texas plants making wooden containers from veneer, and most of these were in East Texas. Though an important industry in East Texas, veneer and plywood consume less than 2 per cent of the timber cut in the state, and the industry is being threatened by the exhaustion of trees of the desired species, size, and quality.

Another highly specialized wood industry, recently developed in Jacksonville, manufactures wood-particle board from shavings that accumulate at the lumber mills. At present the plant is consuming yellow pine planer shavings at the rate of about 22,000 tons a year and is producing wood-particle board at the rate of 12,000,000 square feet a year. Wood shavings are reduced in size, dried to the proper
moisture content, and mixed with wax and resin for moisture resistance. The mixture is pressed in a hot-plate hydraulic press until it becomes tough and hard, and is then sanded smooth. It is free of grain or knots and can be treated to protect it from termites, mildew, and decay (Dallas Times Herald 1958).

In addition to the wood-products industries that have been discussed, there are many small industries that consume trees from the East Texas forest. These include factories making furniture, handles for brooms, mops, and garden implements, wooden toys, and charcoal. Formerly, charcoal was used in the East Texas iron industry in place of coal, but today it has become very important as a fuel for barbecue pits and outdoor fireplaces. Considerable quantities of wood are used in making fences for farms and city lawns, and in making barrels. In Southeast Texas turpentine and other distillates are being extracted from longleaf pine stumps. In addition, a sizable quantity of timber is cut annually for firewood.

**Scientific Forestry**

The rapid depletion of the forests in East Texas during the 1920's and 1930's, and the destructive forest fires that often accompanied the abandonment of forest holdings, produced a scene of desolation. Timber harvest methods, including the use of the skidder, were destroying the second growth timber that nature was trying to provide. All of this has been changed, however, within the past twenty-five or thirty years, and this same terrain now is covered with pines and hardwoods. A recent joint report by the United States Forest Service and the Texas Forest Service showed nearly eleven million acres of East Texas in forests—approximately one-half the entire area devoted to agricultural, industrial, and forest uses. Over much of the timbered area today forest growth exceeds the timber harvested. This is a co-operative reforestation program conducted by the Texas Forest Service, the United States Forest Service, and the large lumber mills and pulp mills.

*The National Forests.* Texas, when admitted to the Union in 1845, retained ownership of all public lands. The federal government, therefore, owned no land in the state except that which it purchased or received as a gift. Realizing the desirability of establishing National Forests in parts of the piney woods of East Texas, the state legislature passed an act in 1933 which authorized the purchase of land in the state for the establishment of National Forests. These purchased lands
were given to the United States government and were proclaimed National Forests in October, 1936. Four forests (Fig. 19) were established (Texas Almanac 1958-1959, p. 196):

<table>
<thead>
<tr>
<th>Forest</th>
<th>Area</th>
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<tbody>
<tr>
<td>Sabine National Forest</td>
<td>183,862 acres</td>
</tr>
<tr>
<td>Angelina National Forest</td>
<td>154,392 acres</td>
</tr>
<tr>
<td>Davy Crockett National Forest</td>
<td>161,566 acres</td>
</tr>
<tr>
<td>Sam Houston National Forest</td>
<td>158,205 acres</td>
</tr>
<tr>
<td>Total area</td>
<td>658,025 acres</td>
</tr>
</tbody>
</table>

Figure 19. The National Forests in East Texas: (1) Sabine National Forest, (2) Angelina National Forest, (3) Davy Crockett National Forest, (4) Sam Houston National Forest.

As is the policy in National Forests throughout the country, these timbered areas are managed so as to maintain the maximum benefits to the public from the resources involved. Each forest, which constitutes a working unit, is subdivided into compartments of about 3,000 acres. Sales of sawtimber, pulpwood, and other forest products from the compartments are made at regular intervals, after the trees to be cut have been marked by government forest rangers. The National Forests
also provide fire protection, issue grazing permits, and provide numerous recreational features.

State Forests. Although the establishment of State Forests in the East Texas area antedates that of the National Forests by a few years, they are neither numerous nor large. The four State Forests of the area are the E. O. Siecke State Forest, the W. Goodrich Jones State Forest, the I. D. Fairchild State Forest, and the John Henry Kirby State Forest (Texas Almanac 1958-1959, p. 195). The total area of these four forests is only a little over six thousand acres. In a smaller way these duplicate the work of the National Forests.

Forest Nurseries and Tree Farms. The Texas Forest Service has established two large nurseries, at Magnolia Springs, near Kirbyville in Newton County, and at Indian Mound near Alto in Cherokee County. From these nurseries young pine seedlings are grown to provide stock for replanting vast areas of East Texas needing reforestation. The total production of pine seedlings from these nurseries exceeds seventy million annually.

A recent development in the forest region is the establishment of tree farms. This has been carried out through the forested areas of the nation, but the total number of tree farms in East Texas makes it one of the leaders in this activity. Though this plan has been sponsored largely by the Texas Forest Service, numerous large landholders have developed tree farms on their own lands. One of the most active companies in this development is the Kirby Lumber Corporation, which is perpetuating its privately owned forest resources by growing more trees than are harvested. Tree farming is now practiced on 550,000 acres of forested land owned by this company. Other large lumber mill and pulp mill interests have established tree farms. All of these programs, of course, include protection against forest fires, insects, and disease.

SPECIALIZED INDUSTRIES

The East Texas region became rejuvenated in the early 1930's as a result of the development of the petroleum and natural gas industry, the revival of agriculture through specialization, and the revival of certain defunct or nearly defunct industries such as iron and steel making and sawmilling and other woodworking industries. In addition, many specialized industries have been established within the region, because of the presence of certain raw materials, an adequate supply of industrial waters, an abundance of fuel from the oil and gas fields, good
transportation facilities, and a growing market for manufactured products. The industries are too numerous to consider in detail, but a few will be listed.

Ordnance plants of the United States government that secure some of their materials used in explosives from lignite are located in Bowie County, ten miles west of Texarkana, and in Harrison County south of Marshall. The Marshall area also has an activated carbon plant which derives its basic material from the same source.

Specialized foundries fabricating iron and steel products for the petroleum industry and for other industries are located in Lufkin, Longview, Marshall, and Tyler. The Lufkin Foundry and Machine Company manufactures a variety of products including oil and gasoline pumps, truck trailers, and sawmill machinery. These industries, together with large sawmills and the Southland Paper mill, make Lufkin one of the most highly industrialized centers of East Texas.

Industries associated with the processing of foods are scattered throughout the area. These include the making of pickles and the manufacture of glass bottles. Also in this category should be mentioned the many box, crate, and container factories that serve the food industries.

Salt is mined and refined by the Morton Salt Company at Grand Saline in Van Zandt County. This industry obtains its rock salt from a buried salt plug, and refines and packages it for shipment throughout the United States.

Clay tile and clay pipe manufactured in several East Texas centers are sold in both local and distant markets.

Several large industries that have come recently to East Texas are concentrated largely in and around Tyler and Longview. Tyler has become the home of General Electric Company's $15,000,000 plant (Fig. 20) which manufactures electrical home heating and cooling equipment for the southwestern market. In Overton, near Tyler, is located a new million-dollar plant of the National Homes Corporation, which makes prefabricated houses. Longview is the home of the LeTorneau Company, which manufactures heavy earth-moving machinery and many other types of large industrial equipment, including oil well drilling platforms for the offshore Gulf area. Eastman Kodak Company also selected Longview as the site for producing polyethylene plastics for kodak films.

The establishment of these multi-million-dollar industries in East Texas shows the confidence major companies have in the future of the
region. As the region becomes more industrialized, the population, particularly in certain urban areas, will increase, and this in turn will help increase the purchasing power of the region. All of this is a phase in the modern development of the East Texas Forest Region.

**EAST TEXAS AS AN ECONOMIC REGION**

East Texas has regional unity when considered from the point of view of physiography, climate, soils, or vegetation; and its early settlement and development reveals also a distinctive regional pattern—all of this despite the fact that the regional boundaries are somewhat vague and that they differ according to the criterion used. The major part of this study, however, has been organized on a systematic basis with emphasis placed on the major economic activities within the regional boundaries. Following this systematic study it seems desirable to describe the economic and cultural unity of East Texas.

*Modern Transportation as a Unifying Factor.* From the early days of railroad building the East Texas region was set apart from the rest of the state because of its location near the older, better settled part of the Old South, and because its timbered terrain provided wood for cross ties. The first railroads built in this region expanded westward or southwestward from the gateway centers of Texarkana, Shreveport,
Marshall, or Orange-Beaumont. During the period of railroad construction the following major lines were built in East Texas (Fig. 10):

1. The Texas and Pacific
   (a) Texarkana-Paris-Fort Worth
   (b) Texarkana-Marshall-Dallas

2. The International Great Northern (Missouri Pacific)
   (a) Longview-Palestine-San Antonio-Laredo
   (b) Palestine-Houston

3. The Saint Louis Southwestern (Southern Pacific)
   (a) Texarkana-Tyler-Waco
   (b) Mount Pleasant-Dallas-Fort Worth
   (c) Tyler-Lufkin

4. Houston East and West Texas (Southern Pacific)
   (a) Shreveport-Lufkin-Houston

5. Texas and New Orleans (Southern Pacific)
   (a) Beaumont-Nacogdoches-Dallas

6. Gulf Colorado and Santa Fe
   (a) Beaumont-Longview-Ore City

In addition, numerous branch lines and several small independent logging railroads were built. One of these independent lines, known as the Moscow, Camden, and San Augustine Railroad, is still operating in Polk County between Moscow and Camden, a distance of 6.8 miles (Texas Almanac 1958-1959, p. 289). Although it continues to run a daily freight, the train’s speed is so slow that at the point where the track crosses U.S. Highway 59, the highway traffic has the right of way and the train stops to let automobiles and trucks pass.

With the closing of many of the small sawmills in East Texas, most logging railroads were dismantled. In time some branches of the major railroads were abandoned, and still more recently several of the major railroads have either greatly curtailed or discontinued passenger service. With the exception of the Texas and Pacific between Texarkana and Dallas and the Missouri Pacific to San Antonio, practically all railroads of this region are now operated only for freight.

Highways did not become important in East Texas until the 1920’s, when the automobile and motor truck began to be important, but the major period of highway building began in the 1930’s, more or less concurrently with the East Texas oil boom. Highway development is continuing, and the entire region is now served by a compact network of hard-surfaced and paved roads (Fig. 21) consisting of some ten
federal highways, numerous state highways, and many "farm to market" roads. Where formerly it was impossible to reach many parts of East Texas by automobile, hardly a settlement exists today that is not easily accessible by one or more hard-surfaced roads. This excellent

Figure 21. The major highways of East Texas.
system has helped in the emancipation of backwoods areas. Modern highways have played and will continue to play a major role in the economic life of East Texas.

In early times there was steamboat navigation on Caddo Lake and its tributary, Big Cypress Creek, as far into East Texas as the port of Jefferson, and there was also sporadic navigation on the lower courses of the Sabine, Neches, and Trinity rivers; but water transportation was never very significant to this region. If the Trinity River is made navigable for barge traffic to the North Texas cities of Dallas and Fort Worth, the western part of this region should profit greatly.

Air traffic, also, has been of minor importance in this region. Lying as it does between the eastern part of the United States and the larger Texas cities of Houston and Dallas, East Texas has no major airline service. Small commercial airfields in Texarkana, Marshall, Longview, Tyler, and Lufkin are reached by daily scheduled flights of Trans-Texas Airways (Fig. 22), but connections must be made at Houston or Dallas for long-distance flights.

One of the major transportation systems of East Texas is the dense network of oil and gas pipelines that covers almost every part of the region. Much of the oil moves by pipeline to Port Arthur (one of the major oil shipping ports of the nation) or to other Gulf ports, but natural gas is transported chiefly through large pipes from the collecting centers of East Texas to the great industrial centers of the Northeast.

Markets. In the early pioneer period, practically everything except cotton that was produced in East Texas was for local consumption. Cotton was transported by wagons from the plantations to the nearest steamboat landing and then shipped down the Red and Mississippi rivers to New Orleans, or was hauled by wagons to Houston or Galveston for shipment. During the Civil War a few other products, including iron, were sent out of the region to the fighting fronts, but this terminated at the end of the war. With the coming of railroads, East Texas for the first time began to depend upon outside markets to buy the large quantity of lumber that was being cut by the sawmills. Although much of this lumber was shipped northward and northeastward by rail, considerable quantities moved to the Gulf Coast ports of Beaumont, Houston, or Galveston. This widening of the market area for East Texas lumber was an important factor in developing the Gulf Coast ports of the Sabine-Neches area. Beaumont, immediately south of this region, became a major lumber shipping port.
With the development of the oil industry, at Spindletop and at other places inland from the coast, and with the opening of the East Texas oil field and the Carthage gas field, petroleum and natural gas became major products. At first most oil was transported by railroad tank car, but as pipelines were developed, both oil and gas moved by
major pipelines to the Gulf Coast ports for shipment by tankers, or directly by pipeline to large urban centers in the North and East. These larger markets outside the timbered region not only provided an outlet for its products, but also enabled the people living within the area to purchase manufactured goods from other parts of the country. With the modern industrial development, East Texas is producing manufactured products for world markets. Lumber and pulp and paper are moving to distant markets; oil field equipment, particularly pipe, is being shipped to oil fields all over the world; earth-moving machinery and heavy drilling equipment are going into remote parts of the world as well as to pioneer regions not so remote; and specialized crops, such as rose bushes and other nursery stock, are being marketed nation-wide. This development, in turn, has led to the growth of the urban centers of East Texas, so that local markets are again becoming important. Most East Texas products, however, reach markets in the large cities of contiguous areas either for consumption there or for shipment to more remote areas. These cities include Shreveport, Dallas and Fort Worth, and the Gulf port cities of Houston, Galveston, Beaumont, Port Arthur, and Orange (Fig. 2). With excellent highway and pipeline transportation systems the marketing of products from this region is no longer a major problem.

EAST TEXAS AS A CULTURAL REGION

Throughout its occupancy by white men, and particularly following its settlement by Anglo-American pioneers and their Negro slaves, East Texas has remained a distinct cultural unit, differing markedly from the other parts of the state and the Southwest. In ante-bellum days this was due largely to the plantation system, but even as late as 1930 it was still somewhat true, because of the relative isolation of many forest communities. The logging and lumbering industry broke down this isolation locally, but the development of the oil industry in the 1930's and the industrial expansion that followed, coupled with the building of many good roads, removed the last vestige of isolation from most of the region. Some small areas in the piney woods, however, are still relatively remote and present a picture not greatly different from their appearance in the nineteenth century.

From 1850—the time of the first United States Census taken in Texas—until about 1940 the composition of the population consisted mainly of Anglo-Saxon stock that had migrated from the Old South,
together with large numbers of Negroes. Several old Spanish families remained in East Texas after 1836, and in recent years a considerable number of Caucasian immigrants have moved into the region, but both groups combined constitute only a small percentage of the total population. The East Texas oil field brought new people to the region, but they settled largely in the cities or in the new oil towns. World War II, however, attracted many rural people to the larger industrial centers of the nation for the duration of the war, and most of them did not return. This was particularly true of the Negro population. The decline of cotton production at the same time made it necessary for the small cropper either to move to some other agricultural region, or change his type of farming, or go to the city as an industrial worker. This period of land abandonment is somewhat similar to a previous one that took place in East Texas in the 1870's when the railroads were building westward and the better agricultural lands of the prairies were being settled. Of the 35 counties of East Texas, all but eight (Fig. 23) lost population between 1940 and 1950. These eight counties (Bowie, Gregg, Smith, Angelina, Jasper, Walker, Montgomery, and Liberty) gained in population largely because they had growing industrial centers within their boundaries. Within those counties that gained population, however, there was a decrease in the rural population and a definite movement to the city. This movement to East Texas urban centers or to those outside the region is particularly noticeable in the Negro population. The 1960 census should show a marked decrease in Negro population in proportion to the total number, since many rural Negro families have moved to the cities.

Though the total population of East Texas either decreased or showed only a slight increase between 1940 and 1950, the region is not one of declining economy. Many of the cities have acquired considerable wealth. Some have beautified their business and residential areas so that they now compare favorably with cities of like size in other progressive parts of the United States. Though many of the new homes in these cities have been built in the ultramodern style of architecture, the Southern Colonial type, which adapts itself so nicely to the stately trees of the region, is still prominent.

The region has a good system of public schools and a fair number of municipal junior colleges. It also has three Negro colleges that are well housed and equipped, as well as senior state colleges for whites at Nacogdoches and Huntsville. In religious life East Texas has been
Figure 23. Population changes in East Texas between 1940 and 1950. All counties except the eight shaded lost population during that decade.

very active. Practically all denominations are represented in the towns and cities, although in the rural areas only a few kinds of churches are found. Some of the new churches would be a credit to any city in the United States.
East Texas is now a region of mature economy, with a wealth of resources insuring future growth along lines already developed. In resources it possesses an excellent forest which is now being replaced as fast as or faster than it is being cut, a large supply of oil and gas to satisfy future needs of industry, a good supply of iron ore, and large deposits of lignite, salt, clay, and other minerals. Agricultural lands in the future will tend more and more toward specialized crops, such as fruit growing or rose cultivation, or the land will be placed in pasture for raising beef and dairy cattle. Much land that was formerly in cotton, however, may in time be returned to forests as a better utilization of the poorer soils. One resource which East Texas has in great abundance in contrast to other parts of the state is sufficient water for domestic and industrial uses. In time this may attract more industries to the region than any other resource. The cities of East Texas will continue to grow as additional industries are established, and in time some of these will pass the hundred-thousand mark.
Bibliography


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